

Rain Gardens

*A landscape tool
to improve water quality*



TECHNICAL GUIDE
Virginia Department of Forestry

www.dof.virginia.gov

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Foreword

This guide has been compiled as a resource for individuals interested in creating a landscape feature that will: solve drainage problems, address erosion problems, improve water quality, create wildlife habitat, and/or create a garden focal point. We hope homeowners, teachers, community leaders, gardeners, and landscape architects will find this information useful.

The Virginia Department of Forestry has shown leadership in promoting Rain Gardens for improved water quality for seven years. Demonstration projects have been implemented throughout the state and partnerships have been formed for these projects, resulting in agencies, organizations and citizens becoming interested in the concept of Rain Gardens. It has become clear that there is a need for a guide that landowners can use to develop a Rain Garden on their property. This concept is an element of planning low-impact development, retrofitting older development, and creating natural solutions to drainage and erosion problems.

It is the intention of this guide to limit the technical jargon found in manuals designed for engineers, without losing the purpose and integrity of the bio-retention concept. It is also the intention of this guide to present the sources of information and guidance necessary to avoid mistakes that would be troublesome to landowners, their neighbors or jurisdictional ordinances.



Introduction

Rain is an important occurrence in nature because it replenishes water supplies, provides moisture for living resources and maintains flow levels of rivers and streams. There are also negative effects that rain can cause due to human interactions. All deposited pollutants on surfaces wash away with rain and flow overland to the nearest waterway. Examples of less desirable substances that are carried in storm water runoff are petroleum products, animal waste, fertilizers, pesticides, and household chemicals. Although we use these substances in our daily lives, how can we protect our waterways? The first line of defense is to alter human behavior in a positive direction. A secondary means of protecting our waterways from pollution is the use of practices that intercept storm water runoff before it enters the waterways.

The landscape of Virginia is ever changing, and, for several decades, we have witnessed the conversion of rural areas to urban. This conversion has created areas with less forests and increased impervious cover, such as sidewalks, roads and roofs. This has amplified the amount of storm water runoff that is being carried directly to streams and lakes with little or no treatment. Problems created by urban and rural runoff include increased pollutants and temperatures in waterways, increased flooding, and increased costs for municipalities.

On a regional level, municipalities have developed catch basins—known as storm water management ponds—to gather storm water from developed land with impervious surfaces. The storm water ponds are intended to mimic forested floodplains in their retention of water and the beneficial removal of nutrients. Although there are many jurisdictions that are not yet employing these methods of storm water management, many communities were developed before storm water management was required.

The natural resource consequences of traditional storm water management practices without volume controls include: stream degradation, soil erosion and nutrient loading of waterways, loss of in-stream and corridor habitat, and riparian buffer loss along streams. It is through new technology in current development and older, pre-storm water management development that water quality improvement goals can be met.

Bioretention is the most current practice used to minimize impacts of storm water runoff. Bioretention takes several forms, which include grassy swales, engineered wetlands, and Rain Gardens. Each of these practices employs physical water retention and biological and chemical interaction between soil, vegetation, and water. All of these practices mimic one or some of the functions of a riparian forest buffer. In altered or urban landscapes, the use of bio-retention practices mitigates the amount of runoff from smooth, compact surfaces. The more impervious surface present in a landscape, the less rainwater that will infiltrate into the soil and recharge groundwater supplies. Figure 1 illustrates the effects of increased imperviousness.

There are many situations where the development of a Rain Garden would be beneficial. Placing a Rain Garden in your yard is easier than you may think. Follow the guidelines, plan well, and have fun. Your investment of time and resources will reward you for many years to come. For other water quality protection tips that you may use, refer to Appendix A.

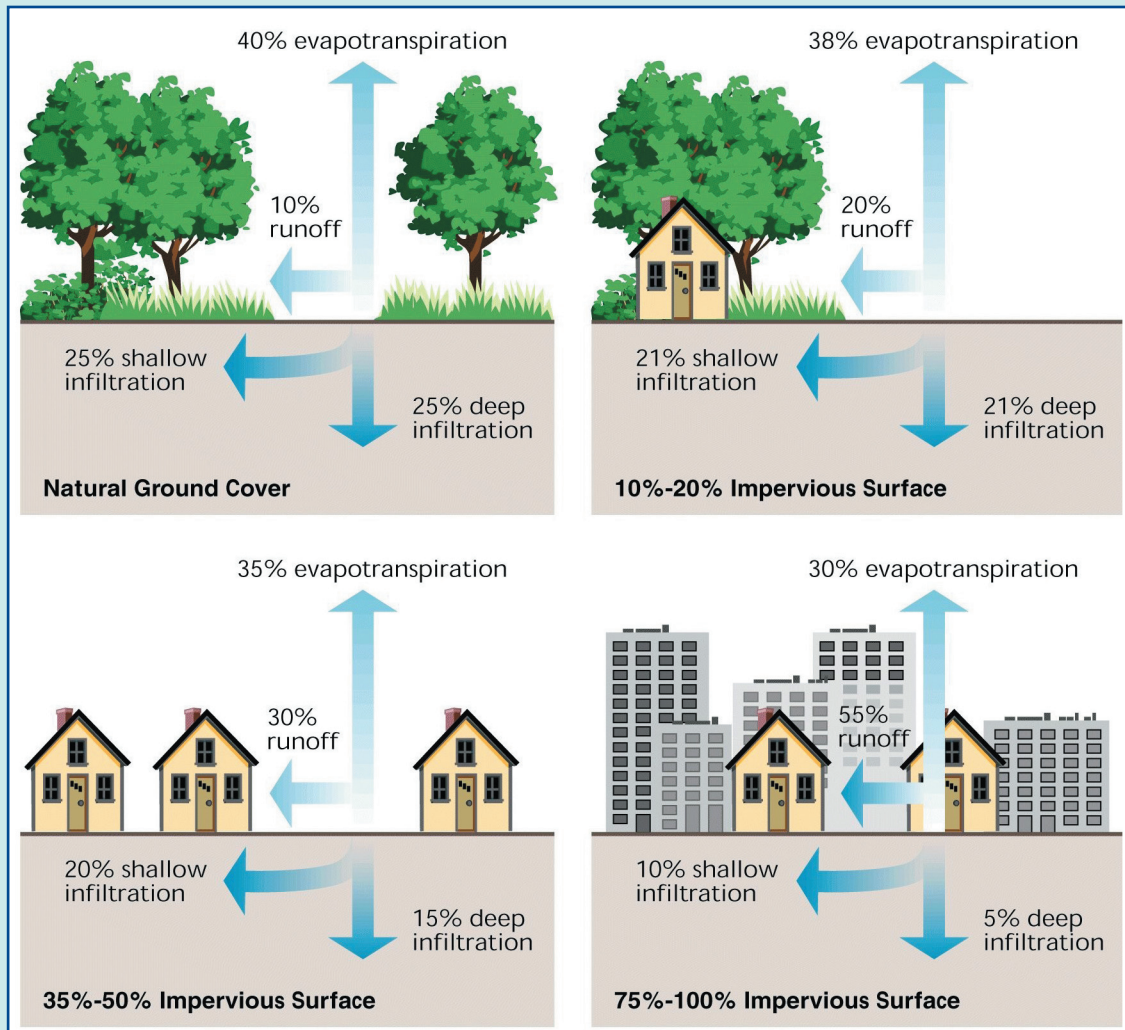


Figure 1: Forest function changes that take place with increased development.
http://www.nrcs.usda.gov/technical/stream_restoration/schimage.htm

What is a Rain Garden?

A rain garden is just what the name implies—a garden planted with native plants that can be placed within your yard. It captures the first flush or runoff from a rain event. By capturing the runoff in the Rain Garden, you will not only provide runoff reduction benefits, you may also produce substantial neighborhood and community environmental benefits, such as:

- ◆ An increase in the vegetation mixture in your yard that will provide habitat for insects and birds;
- ◆ An enhancement of the beauty of your yard, thereby improving the landscape in your neighborhood;
- ◆ An increase in the amount of groundwater renewal;
- ◆ The bringing together of your family and neighbors for a fun, physical activity;
- ◆ Plant material that can provide shade and a light or noise screen, and
- ◆ A layer of vegetation to include a canopy, understory and ground cover.